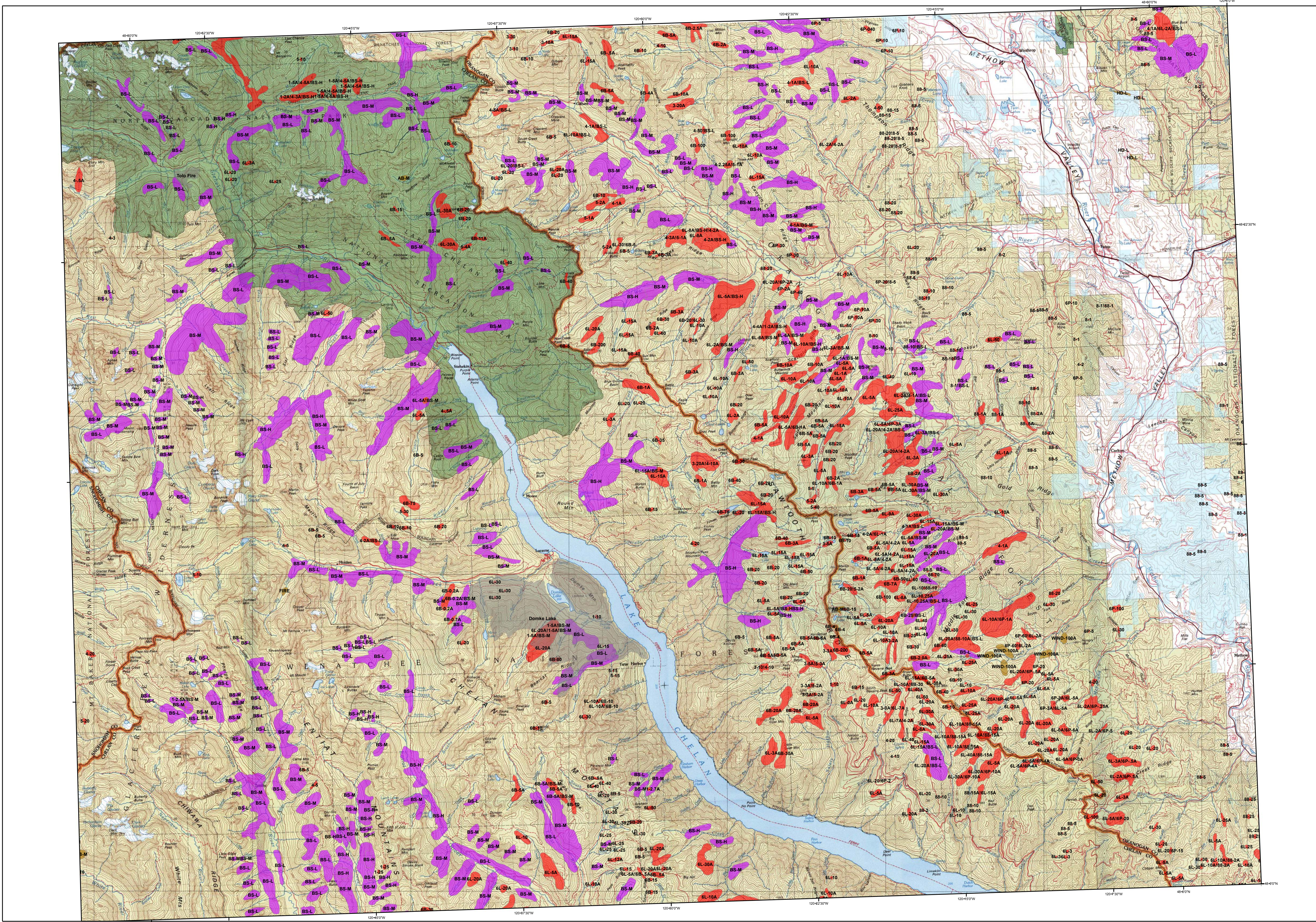


2007 Aerial Insect and Disease Survey

USGS 100K Quad: Twisp - A148120; 5B



Defoliators			Mortality Agents		
Code	Damaging Agent	Primary Host	Code	Damaging Agent	Primary Host
AS	Spruce aphid	Sitka spruce	1	Douglas-fir beetle	Douglas-fir
BB	Western blackheaded budworm	Hemlock, spruce, true fir	2	Douglas-fir engraver	Douglas-fir
BM	Modoc budworm	White fir	3	Spruce beetle	Spruce
BP	Sugar pine tortrix	Lodgepole, ponderosa pines	4	True fir	Sub-alpine fir
BY	Brynnum's blight/Lophodermella	True fir, Douglas-fir, spruce	5	Western bark bark beetle	Whitebark pine
CH	Larch	Western larch	6	Mountain pine beetle	Jeffrey pine
HL	Western hemlock looper	Western hemlock looper	7	Knockcone pine	Lodgepole pine
LG	Green striped forest looper	Douglas-fir, Western hemlock	8	Mountain pine beetle	Ponderosa pine
LL	Larch looper	Western larch	9	Mountain pine beetle	Sugar pine
LS	Black pine needle scale	Ponderosa pine	10	Mountain pine beetle	Western white pine
MD	Douglas-fir budmoth	Western larch	11	True fir	Ponderosa, lodgepole pines
ML	Larch budmoth	Douglas-fir	12	Western pine beetle	Pole-sized ponderosa pine
MN	Douglas-fir needle midge	Spruce	13	Western pine beetle	Silver fir, true fir
MS	Spruce budmoth	Jeffrey pine	14	Bear damage	Conifer
NJ	Needle miner	Jeffrey pine	15	Flatheaded wood borer	Douglas-fir, ponderosa pine
NK	Needle miner	Knockcone pine	16	Black stain root disease	Port Orford cedar
NL	Needle miner	Lodgepole pine	17	Port Orford cedar root disease	Port Orford cedar
NP	Needle miner	Conifer	18	Root disease	Conifer
NS	Needle miner	Ponderosa pine	19	Water damage	All species
NT	Needle miner	Sugar pine			
OW	Needle miner	True fir			
OL	Western oak looper	Western white pine			
OB	Pine butterfly	Cedars			
OC	Pine needle cast	Ponderosa pine			
PH	Phantom hemlock looper	Hemlock, Douglas-fir			
PM	Pandora moth	Ponderosa, Jeffrey pines			
PN	Pine needle sheath miner	Ponderosa, Jeffrey pines			
PS	Pine needle scale	Western larch			
RC	Needle cast	Conifer			
SD	Sawfly	Conifer			
SA	Sawfly	Douglas-fir			
SB	Sawfly	True fir			
SH	Sawfly	Hemlock			
SK	Sawfly	Knockcone pine			
SM	Sawfly	Lodgepole pine			
SN	Sawfly	Aspen			
SNC	Swiss needle cast	Douglas-fir			
SP	Sawfly	Ponderosa pine			
SW	Sawfly	Western larch			
TA	Tent caterpillar, alder	Alder			
TC	Tent caterpillar, other	Hardwoods			
TD	Douglas-fir tussock moth	True fir, Douglas-fir			
TS	Tent caterpillar, aspen	Aspen			

USGS 100K Quad: Twisp - A148120; 5B
2007 Aerial Insect and Disease Detection Survey
Mapscale: 1:100,000
Date: November 30, 2007

Legend

- Defoliating Agents
- Mortality Agents
- Other Damage
- WadNR Managed Lands

Source: Washington Dept. of Natural Resources

2007 Large Fires
Source: Northwest Coordination Center

Other Damaging Agents

Code	Damaging Agent	Primary Host
AB	Balsam woolly adelgid	True fir
AC	Cedrus sp. gall adelgid	Douglas-fir
AD	Leaf discoloration	Mistle
BE	Blister rust	Five-needle pines
CC	Cytospora canker	True fir
DH	Dying hemlock	Hemlock
FI	Fire	All species
GP	Gouty pitch midge	Ponderosa pine
HS	Hail	All species
HD	Hardwood decline	Hardwoods
HF	Heat not flown	All species
NO	No damage detected	Pacific madrone
PD	Pacific madrone decline	Poplar
PR	Leaf rust in poplars	All species
RE	Reclaim	All species
SL	Slide	All species
UN	Unknown defoliation	All species
UNM	Unknown mortality	All species
WAT	Water damage	All species
WDT	Wind throw	All species
WDR	Winter Damage	All species

The cause of damage is described by a symbol listed above and is followed by: number of trees affected; number of trees affected (example: 5A); or intensity of damage (L-Light, M-Moderate, H-Heavy).

The map base was created with TOPO! (Copyright 2001, National Geographic); available online at: www.ngmapstore.com

A data dictionary, digital copies of this map and ArcGIS insect and disease data are available at: www.fs.fed.us/r6/nr/inr/data.shtml

Vicinity Map

How the Aerial Surveys are Conducted

Data represented on this map are based on trees visibly affected by forest insects and diseases detected and recorded during aerial survey flights conducted by the USDA Forest Service and the Washington Department of Natural Resources. Observers have just a few seconds to recognize the color difference between healthy and damaged trees of different species; diagnose causal agents correctly; estimate intensity; delineate the extent of damage; and precisely record this information on a georeferenced, digital map. Air turbulence, cloud shadows, distance from aircraft, haze, smoke and observer experience can all affect the quality of the survey. These data summaries provide an estimate of conditions on the ground and may differ from estimates derived by other methods.

The aerial survey provides information on the current status for many causal agents, and is important when examining insect activity trends by comparing historical and current survey data over large areas.

Overview surveys are a 'snap shot' in time and therefore may not be timed to accurately capture the true extent or severity of a particular disturbance activity. Specially designed surveys with modified flight patterns and timing may be conducted to more accurately delineate the extent and severity of a particular disturbance agent. Special surveys, such as Swiss needle cast surveys, are conducted when resources are available to address situations of sufficient economic, political or environmental importance.

DIRECT ALL INQUIRIES TO:

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-- OR --

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Portland, Oregon 97208

****DISCLAIMER****

The insect and disease data presented should only be used as an indicator of insect and disease activity, and should be ground-checked for precise location, extent, severity and causal agent.

Color coded polygons show locations where trees were recently killed or defoliated. Intensity of damage is variable and not all trees within coded polygons are dead or defoliated.

The cooperators reserve the right to correct, update, modify or replace GIS products without notice. Using this map for purposes other than those for which it was intended may yield inaccurate or misleading results.